

REMARKS

Claims 1, 5-28, 32-34 and 36-39 remain in the application, in which claims 7-14, 18-23, 32-34 and 36-39 have been withdrawn from consideration. Claims 2-4, 29-31, 35, and 40-42 have been cancelled. No claim is currently amended. Applicants respectfully request for allowance of the elected claims 1, 5, 6, 15-17, and 24-28.

Rejections under 35 U.S.C. §103

Claims 1, 5, 15-17, and 24-28 are rejected under 35 USC 103(a) as being unpatentable over European Patent Application Publication No. EP 0,828,332 to Konishi (hereinafter referred to as “Konishi”).

Claim 1 is directed to a method of monitoring the condition of a pump the method comprising the steps of: generating a predetermined test condition in the pump comprising generating and sustaining for a substantial period of time an abnormal pump speed outside a range of normal pump operation speed whereby the pump is subject to an increased stress as compared with normal operating stresses, thereby causing a reduction in clearance between a rotor and a stator of the pump; and obtaining signals indicative of an amount of the clearance between the rotor and the stator of the pump during a period in which the test condition is present, wherein the signals are derived from a current consumed by a motor driving the rotor of the pump.

Examiner acknowledges “Konishi et al do not specifically indicate generating an ‘abnormal’ pump speed, per se.” *See, the Office Action, page 2, lines 15-16.* However, Examiner asserts that Konishi indicates that friction mapping is possible, and therefore it would have been obvious for a person skilled in the art to apply abnormal speeds to a pump in creating the friction map. *See, the Office Action, page 2, line 16-23.* Applicants

In the claimed invention, the abnormal pump speed is defined as a speed outside a range of normal pump operation speed whereby the pump is subject to an increased stress as compared with normal operating stresses, thereby causing a reduction in clearance between a rotor and a stator of the pump. The abnormal speed induces an increased frictional stress as opposed to the normal speed.

Unlike the claimed invention, Konishi teaches avoidance of frictional stress in friction mapping. Konishi, on page 5, lines 44-48, teaches following:

For the friction mapping, it is important to use the current data obtained for a short period of time. Because the relation of current-to-torque data is a function of th [sic] rotation speed of the motor. [sic] Once the pump has a friction load, the motor tends to change the rotation speed in accordance with the load of friction. Therefore, the current data for short time during when the change of rotation is negligible small is used and the torque calculated from the current is regarded as corresponding to the motor load.

It is clear that Konishi teaches removing the friction-load component from calculating the torque in friction mapping, such that the calculated torque can be regarded as corresponding to the motor load. In other words, Konishi teaches away from friction mapping where a frictional stress induced by an abnormal speed is applied to a pump.

A prior art reference must be considered in its entirety, i.e., as a whole, including portions that would lead away from the claimed invention. *W.L. Gore & Associates, Inc. v. Garlock, Inc.* 721 f.2d 1540 (Fed. Cir. 1983). If proposed modification would render the prior art invention being modified unsatisfactory for its intended purpose, then there

is no suggestion or modification to make the proposed modification. *In re Gordon*, 733

F.2d 900 (Fed. Cir. 1984). As discussed above, operating a pump at an abnormal speed would induce frictional stress, thereby causing the friction mapping to be inaccurate in terms of corresponding the calculated torque to the motor load. Thus, in view of Konishi, it would not have been obvious for a person skilled in the art to apply abnormal speeds to the pump in the friction mapping.

As such, Applicants respectfully submit that claim 1 is patentable over Konishi under 35 USC 103(a). Accordingly, claims 5, 15-17, and 24-28 that depend from claim 1 and include all the limitations recited therein are also patentable over Konishi under 35 USC 103(a).

Allowable Subject Matter

It is noted that claim 6 is objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim of any intervening claims.

CONCLUSION

Applicants have made an earnest attempt to place this application in an allowable form. In view of the foregoing remarks, it is respectfully submitted that claims 1, 5, 6, 15-17, and 24-28 are drawn to a novel subject matter, patentably distinguishable over the prior art of record. Examiner is therefore, respectfully requested to reconsider and withdraw the outstanding rejections.

Should Examiner deem that any further clarification is desirable, Examiner is invited to telephone the undersigned at the below listed telephone number.

Applicants do not believe that any additional fee is due, but as a precaution, the Commissioner is hereby authorized to charge any additional fee required by this submission to deposit account number 50-4244.

Respectfully submitted,

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